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Oil Pollution Detection, Monitoring and Law Enforcement
Quarterly Progress Report, November 1973

EREP Investigation 417
NASA Contract NAS9-13281

Prepared by

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This report covers progress during the third quarter of Contract NAS9-13281, "Evaluate Skylab EREP Data for Oil Pollution Detection, Monitoring and Law Enforcement", EREP No. 417. The work is being conducted in the Infrared and Optics Division of the Environmental Research Institute of Michigan, under the general supervision of Mr. R. R. Legault. The principal investigator is Mr. R. Horvath.

Efforts to modify ERIM's atmospheric radiative transfer model were successfully completed during the quarter. The capability now exists for calculating atmospheric transmittance, path radiance and ground irradiance for haze conditions representing continental or maritime aerosol distributions, and for intermediate distributions described by a linear combination of these two conditions.

Sample model runs were conducted in order to define the relative radiometric significance of the differences in aerosol size distribution between continental and maritime haze, for the condition of space observation at or near to the nadir angle. The following general conclusions are indicated:

1) For wavelengths in the blue portion of the visible spectrum, haze type is not a significant parameter for solar zenith angles in excess of 30°. However, the path radiance can be affected by factors of 2 or more if the sun is at the zenith.

2) At mid-visible (green) wavelengths, haze type is a significant (>10%) variable to the path radiance for solar zenith angles less than 25°, and can produce 50 to 100% variability if the sun is at the zenith.

3) In the near infrared wavelengths, path radiance variability due to haze type exceeds the 10% level at solar zenith angles less than 35 or 40°, and has a maximum variability of about 50% for a zenith sun.

No EREP coverage of any significant oil pollution incident is known to have been acquired to date. Until the existence of such data becomes known, no further significant technical efforts will be undertaken.

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Respectfully submitted,

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